Investment Banking

Valuation, LBOs, M&A, and IPOs

THIRD EDITION

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Additional Resources

Investment Banking, Third Edition is supplemented by a suite of products that will further enhance your understanding of the material, including:

- Investment Banking Models (included with purchase of this book)
- Investment Banking: Valuation Module (included with purchase of this book)
- Investment Banking Workbook
- Investment Banking Focus Notes

Professors can learn more about available instructor and student resources by visiting: **www.wiley.com/go/ib3eresources**

VALUATION MODELS (INCLUDED WITH PURCHASE OF THIS BOOK)

Valuation Models for the methodologies discussed in *Investment Banking, Third Edition* are available with purchase of the book. To access the models: input the access code found in the front of the book at **www.wiley.com/go/investmentbanking3e**

There are six model templates as well as six completed models, one for each of the following:

- Comparable Companies
- Precedent Transactions
- DCF Analysis
- LBO Analysis
- Merger Consequences Analysis
- IPO Valuation

WORKBOOK

The *Investment Banking Workbook* is designed for use both as a companion to *Investment Banking, Third Edition*, as well as on a standalone basis. The *Workbook* provides a mix of multi-step problem set exercises, as well as multiple choice and essay questions—over 500 questions in total. It also provides a comprehensive answer key that aims to truly teach and explain as opposed to simply identify the correct answer. Therefore, the answers themselves are an effective learning tool. The completion of this comprehensive guide will help ensure the achievement of your professional and educational milestones.

FOCUS NOTES

Investment Banking Focus Notes provides a comprehensive, yet streamlined, review of the basic skills and concepts discussed in *Investment Banking, Third Edition*. The *Focus Notes* are designed for use as a companion to the main book as well as a standalone study program. This text serves as a one-stop resource in an easy-to-read-and-carry format that serves as a perfect reference material for a quick refresher.

Focus Notes seeks to help solidify knowledge of the core financial topics as true mastery must be tested, honed, and retested over time. It is the ultimate self-help tool for students, job seekers, and existing finance professionals, as well as in formal classroom and training settings.

ONLINE PREP COURSE

www.efficientlearning.com/investment-banking

Investment Banking Online Prep Course is a comprehensive interactive tutorial that serves to provide further context to the main book. It also includes additional topics, such as accounting and financial modeling. With the online prep course, you can study anytime, anywhere, and on any device with the integrated web and mobile platform.

The course features:

- 5 Modules that cover the essentials: Accounting, Financial Modeling, Valuation, Leveraged Finance, and Mergers & Acquisitions
- 500+ end-of-lesson practice questions that test your knowledge and prepare you for interviews
- 20+ hours of video lectures
- Dashboards and performance metrics
- Bonus Feature: Interview training videos covering common technical and behavioral questions
- And much, much more…

Foreword

Mark Twain, long known for his critical views of formal education, once wisely noted: "I never let my schooling interfere with my education."

Twain's one-liner strikes at the core of investment banking, where deals must be lived before proper knowledge and understanding can be obtained. Hard time must be spent doing deals, with complexities in valuation, terms, and negotiations unique to every situation. The truly great firms and dealmakers have become so by developing cultures of apprenticeship that transfer knowledge and creativity from one generation to the next. The task of teaching aspiring investment bankers and finance professionals has been further complicated by the all-consuming nature of the trade, as well as its constantly evolving art and science.

Therefore, for me personally, it's exciting to see Joshua Rosenbaum and Joshua Pearl take the lead in training a new generation of investment bankers. Their work in documenting valuation and deal process in an accessible manner is a particularly important contribution as many aspects of investment banking cannot be taught, even in the world's greatest universities and business schools. Rosenbaum and Pearl provide aspiring—and even the most seasoned—investment bankers with a unique real-world education inside Wall Street's less formal classroom, where deals come together at real-time speed.

The school of hard knocks and of learning-by-doing, which was Twain's classroom, demands strong discipline and sound acumen in the core fundamentals of valuation. It requires applying these techniques to improve the quality of deals for all parties, so that deal makers can avoid critical and costly mistakes, as well as unnecessary risks. My own 50 years of Wall Street education has clearly demonstrated that valuation is at the core of investment banking. Any banker worth his salt must possess the ability to properly value a business in a structured and defensible manner. This logic and rationale must inspire clients and counterparties alike, while spurring strategic momentum and comprehension into the art of doing the deal.

Rosenbaum and Pearl succeed in providing a systematic approach to addressing a critical issue in any M&A, IPO, or investment situation—namely, how much is a business or transaction worth. They also put forth the framework for helping approach more nuanced questions such as how much to pay for the business and how to get the deal done. Due to the lack of a comprehensive written reference material on valuation, the fundamentals and subtlety of the trade are often passed on orally from banker-to-banker on a case-by-case basis. In codifying the art and science of investment banking, the authors convert this oral history into an accessible framework by bridging the theoretical to the practical with user-friendly, step-by-step approaches to performing primary valuation methodologies.

Many seasoned investment bankers commonly lament the absence of relevant and practical "how-to" materials for newcomers to the field. The reality is that most financial texts on valuation and M&A are written by academics. The few books written by practitioners tend to focus on dramatic war stories and hijinks, rather than the nuts-and-bolts of the techniques used to get deals done. Rosenbaum and Pearl fill this heretofore void for practicing and aspiring investment bankers and finance professionals. Their book is designed to prove sufficiently accessible to a wide audience, including those with a limited finance background.

It is true that we live in uncertain and volatile times—times that have destroyed or consumed more than a few of the most legendary Wall Street institutions. However, one thing will remain a constant in the long-term—the need for skilled finance professionals with strong technical expertise. Companies will always seek counsel from experienced and independent professionals to analyze, structure, negotiate, and close deals as they navigate the market and take advantage of value-creating opportunities. Rosenbaum and Pearl promulgate a return to the fundamentals of due diligence and the use of well-founded realistic assumptions governing growth, profitability, and approach to risk. Their work toward instilling the proper skill set and mindset in aspiring generations of Wall Street professionals will help establish a firm foundation for driving a brighter economic future.

Joseph R. Perella
Founding Partner, Perella Weinberg Partners

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Introduction

In the constantly evolving world of finance, a solid technical foundation is an essential tool for success. Due to the fast-paced nature of this world, however, no one was able to take the time to properly codify the lifeblood of the corporate financier's work—namely, valuation and dealmaking. We originally responded to this need in 2009 by writing the first edition of the book we wish had existed when we were trying to break into Wall Street. ***Investment Banking: Valuation, LBOs, M&A, and IPOs, Third Edition*** is a highly accessible and authoritative book written by investment bankers that explains how to perform the valuation work at the core of the financial world. Our book fills a noticeable gap in contemporary finance literature, which tends to focus on theory rather than practical application.

As the world of finance adjusts to the new normal of the post-Great Recession era, it merits revisiting the pillars of our second edition for today's environment. While the fundamentals of valuation and critical due diligence for mergers & acquisitions (M&A), capital markets, LBOs, initial public offerings (IPOs), and other public investment opportunities remain intact, the environment is constantly evolving. This involves the use of more realistic assumptions governing approach to growth and risk, including expected financial performance, discount rates, multiples, leverage levels, and financing terms. While valuation has always involved a great deal of "art" in addition to time-tested "science", the artistry must adapt to changing market developments and conditions. ***As a result, we have updated our widely adopted book accordingly, while adding two new chapters on IPOs.***

The genesis for the original book stemmed from our personal experiences as students seeking to break into Wall Street. As we both independently went through the rigorous process of interviewing for associate and analyst positions at investment banks, we realized that our classroom experience was a step removed from how valuation and financial analysis are performed in real-world situations. This was particularly evident during the technical portion of the interviews, which is often the differentiator for recruiters trying to select among hundreds of qualified candidates.

Faced with this reality, we searched in vain for a practical how-to guide on the primary valuation methodologies used on Wall Street. At a loss, we resorted to compiling bits and pieces from various sources and conversations with friends and contacts already working in investment banking, private equity, and hedge funds. Needless to say, we didn't feel as prepared as we would have liked. While we were fortunate enough to secure job offers, the process left a deep impression on us. In fact, we continued to refine the comprehensive preparatory materials we had created as students, which served as the foundation for this book. And even today, we continue to refine and augment this material for new developments.

Once on Wall Street, we both went through mandatory training consisting of crash courses on finance and accounting, which sought to teach us the skill set necessary to become effective investment bankers. Months into the job, however, even the limitations of this training were revealed. Actual client situations and deal complexities, combined with evolving market conditions, accounting guidelines, and technologies stretched our knowledge base and skills. In these situations, we were forced to consult with senior colleagues for guidance, but often the demands of the job left no one accessible in a timely manner. Given these realities, it is difficult to overstate how helpful a reliable handbook based on years of "best practices" and deal experience would have been.

Consequently, we created this book to provide a leg up to those individuals seeking or beginning careers on Wall Street—from students at undergraduate universities and graduate schools to "career changers" looking to break into finance. This book has also served as important reference material for existing finance professionals. Our experience has demonstrated that given the highly specialized nature of many finance jobs, there are noticeable gaps in skill sets that need to be addressed. Furthermore, many professionals seek to continuously brush up on their skills as well as broaden and refine their knowledge base. This book has also proven invaluable for trainers and trainees at Wall Street firms, both within the context of formal training programs and informal on-the-job training.

Many private equity firms and hedge funds use our book to help train their investment professionals and key portfolio company executives. Many of these professionals come from a consulting or operational background and do not have a finance pedigree. Furthermore, the vast majority of buy-side investment firms do not have in-house training programs and rely heavily upon on-the-job learning. Consequently, our book has served as a helpful reference guide for individuals joining, or seeking jobs at, these institutions.

This book also provides essential tools for professionals at corporations, including members of business development, M&A, finance, and treasury departments. These specialists are responsible for corporate finance, valuation, and transaction-related deliverables on a daily basis. They also work with investment bankers on various M&A transactions (including leveraged buyouts (LBOs) and related financings), as well as IPOs, restructurings, and other capital markets transactions. Similarly, this book is intended to provide greater context for the legions of attorneys, consultants, and accountants focused on M&A, corporate finance, and other transaction advisory services.

Given the increasing globalization of the financial world, this book is designed to be sufficiently universal for use outside of North America. Our work on cross-border transactions in markets such as Asia, Europe, Latin America, India, and the Middle East has revealed a tremendous appetite for skilled resources throughout the globe. Therefore, this book fulfills an important need as a valuable training material and reliable handbook for finance professionals in these markets.

STRUCTURE OF THE BOOK

Our book focuses on the primary valuation methodologies currently used on Wall Street, namely comparable companies analysis, precedent transactions analysis, discounted cash flow analysis, and leveraged buyout analysis. These methodologies are used to determine valuation for public and private companies within the context of M&A transactions, LBOs, IPOs, restructurings, and investment decisions. They also form the cornerstone for valuing companies on a standalone basis, including an assessment of whether a given public company is overvalued or undervalued. As such, these fundamental skills are just as relevant for private equity and hedge fund analysis as for investment banking. Using a step-by-step, how-to approach for each methodology, we build a chronological knowledge base and define key terms, financial concepts, and processes throughout the book.

We also provide context for the various valuation methodologies through a comprehensive overview of the fundamentals of LBOs, M&A, and IPOs. For these core transaction types, we discuss process and analytics in detail, including walking through illustrative analyses as would be performed on live deals. This discussion also provides detailed information on key participants, financing sources and terms, strategies, milestones, and legal and marketing documentation.

This body of work builds on our combined experience on a multitude of transactions, as well as input received from numerous investment bankers, investment professionals at private equity firms and hedge funds, attorneys, corporate executives, peer authors, and university professors. By drawing upon our own transaction and classroom experience, as well as that of a broad network of professional and professorial sources, we bridge the gap between academia and industry as it relates to the practical application of finance theory. The resulting product is accessible to a wide audience—including those with a limited finance background—as well as sufficiently detailed and comprehensive to serve as a primary reference tool and training guide for finance professionals.

This book is organized into four primary parts, as summarized below.

Part One: Valuation (Chapters 1–3)

Part One focuses on the three most commonly used methodologies that serve as the core of a comprehensive valuation toolset—comparable companies analysis (Chapter 1), precedent transactions analysis (Chapter 2), and discounted cash flow analysis (Chapter 3). Each of these chapters employs a user-friendly, how-to approach for performing the given valuation methodology while defining key terms, detailing various calculations, and explaining advanced financial concepts. At the end of each chapter, we use our step-by-step approach to determine a valuation range for an illustrative target company, ValueCo Corporation ("ValueCo"), in accordance with the given methodology. The Base Case set of financials for ValueCo that forms the basis for our valuation work throughout the book is provided in Exhibits I.I to I.III.

In addition, the full set of valuation models and output pages used in this book are accessible on our website: **www.wiley.com/go/investmentbanking3e**

Chapter 1: Comparable Companies Analysis Chapter 1 provides an overview of comparable companies analysis ("comparable companies", "trading comps", or simply, "comps"), one of the primary methodologies used for valuing a given focus company, division, business, or collection of assets ("target"). Comps provides a market benchmark against which a banker can establish valuation for a private company or analyze the value of a public company at a given point in time. It has a broad range of applications, most notably for various M&A situations, IPOs, restructurings, and investment decisions.

The foundation for comps is built upon the premise that similar companies provide a highly relevant reference point for valuing a given target as they share key business and financial characteristics, performance drivers, and risks. Therefore, valuation parameters can be established for the target by determining its relative positioning among peer companies. The core of this analysis involves selecting a universe of comparable companies for the target. These peer companies are benchmarked against one another and the target based on various financial statistics and ratios. Trading multiples—which utilize a measure of value in the numerator and an operating metric in the denominator—are then calculated for the universe. These multiples provide a basis for extrapolating a valuation range for the target.

Chapter 2: Precedent Transactions Analysis Chapter 2 focuses on precedent transactions analysis ("precedent transactions" or "precedents"), which, like comparable companies, employs a multiples-based approach to derive an implied valuation range for a target. Precedents is premised on multiples paid for comparable companies in prior transactions. It has a broad range of applications, most notably to help determine a potential sale price range for a company, or part thereof, in an M&A or restructuring transaction.

The selection of an appropriate universe of comparable acquisitions is the foundation for performing precedent transactions. The best comparable acquisitions typically involve companies similar to the target on a fundamental level. As a general rule, the most recent transactions (i.e., those that have occurred within the previous two to three years) are the most relevant as they likely took place under similar market conditions to the contemplated transaction. Potential buyers and sellers look closely at the multiples that have been paid for comparable acquisitions. As a result, bankers and investors are expected to know the transaction multiples for their sector focus areas.

Chapter 3: Discounted Cash Flow Analysis Chapter 3 discusses discounted cash flow analysis ("DCF analysis" or the "DCF"), a fundamental valuation methodology broadly used by investment bankers, corporate officers, academics, investors, and other finance professionals. The DCF has a wide range of applications, including valuation for various M&A situations, IPOs, restructurings, and investment decisions. It is premised on the principle that a target's value can be derived from the present value of its projected *free cash flow* (FCF). A company's projected FCF is derived from a variety of assumptions and judgments about its expected future financial performance, including sales growth rates, profit margins, capital expenditures, and net working capital requirements.

The valuation implied for a target by a DCF is also known as its *intrinsic value*, as opposed to its *market value*, which is the value ascribed by the market at a given point in time. Therefore, a DCF serves as an important alternative to market-based valuation techniques such as comparable companies and precedent transactions, which can be distorted by a number of factors, including market aberrations (e.g., the tech bubble of the late 1990s and the Great Recession). As such, a DCF plays a valuable role as a check on the prevailing market valuation for a publicly traded company. A DCF is also critical when there are limited (or no) "pure play" peer companies or comparable acquisitions.

Part Two: Leveraged Buyouts (Chapters 4 & 5)

Part Two focuses on leveraged buyouts, which comprise a large part of the capital markets and M&A landscape due to the proliferation of private investment vehicles (e.g., private equity firms, hedge funds, and family offices) and their considerable pools of capital, as well as structured credit vehicles. We begin with a discussion in Chapter 4 of the fundamentals of LBOs, including an overview of key participants, characteristics of a strong LBO candidate, economics of an LBO, exit strategies, and key financing sources and terms. Once this framework is established, we apply our step-by-step, how-to approach in Chapter 5 to construct a comprehensive LBO model and perform an LBO analysis for our illustrative target company, ValueCo. LBO analysis is a core tool used by bankers and private equity professionals alike to determine financing structure and valuation for leveraged buyouts.

Chapter 4: Leveraged Buyouts Chapter 4 provides an overview of the fundamentals of leveraged buyouts. An LBO is the acquisition of a target using debt to finance a large portion of the purchase price. The remaining portion of the purchase price is funded with an equity investment by funds managed by a private equity firm, also referred to as a financial sponsor ("sponsor"). In this chapter, we provide an overview of the economics of LBOs and how they are used to generate returns for sponsors. We also dedicate a significant portion of Chapter 4 to a discussion of LBO financing sources, particularly the various debt instruments and their terms and conditions.

LBOs are used by sponsors to acquire a broad range of businesses, including both public and private companies, as well as their divisions and subsidiaries. Generally speaking, companies with stable and predictable cash flows as well as substantial asset bases represent attractive LBO candidates. However, sponsors tend to be flexible investors provided the expected returns on the investment meet required thresholds. In an LBO, the disproportionately high level of debt incurred by the target is supported by its projected FCF and asset base, which enables the sponsor to contribute a small equity investment relative to the purchase price. This, in turn, enables the sponsor to realize an acceptable return on its equity investment upon exit, typically through a sale or IPO of the target.

Chapter 5: LBO Analysis Chapter 5 removes the mystery surrounding LBO analysis, the core analytical tool used to assess financing structure, investment returns, and valuation in leveraged buyout scenarios. These same techniques can also be used to assess refinancing opportunities and restructuring alternatives for corporate issuers. LBO analysis is more complex than those methodologies previously discussed as it requires specialized knowledge of financial modeling, leveraged finance markets, M&A, and accounting. At the center of LBO analysis is a financial model, which is constructed with the flexibility to analyze a given target under multiple financing structures and operating scenarios.

As with the methodologies discussed in Part One, LBO analysis is an essential component of a comprehensive valuation toolset. On the debt financing side, LBO analysis is used to help craft a viable financing structure for the target on the basis of its cash flow generation, debt repayment, credit statistics, and investment returns over the projection period. Sponsors work closely with financing providers (e.g., investment banks) to determine the preferred financing structure for a particular transaction. In an M&A advisory context, LBO analysis provides the basis for determining an implied valuation range for a given target in the eyes of sponsors.

Part Three: Mergers & Acquisitions (Chapters 6 & 7)

Part Three provides a comprehensive foundation for M&A, including process, strategies, deal structure, and analytics. M&A is a catch-all phrase for the purchase, sale, spin-off, and combination of companies and their parts and subsidiaries. M&A facilitates a company's ability to continuously grow, evolve, and re-focus in accordance with ever-changing market conditions, industry trends, and shareholder demands. M&A advisory assignments are core to investment banking, traditionally representing a substantial portion of the firm's annual corporate finance revenues. In addition, most M&A transactions require financing on the part of the acquirer through the issuance of debt and/or equity.

In Chapter 6, we focus on sell-side M&A including the key process points and stages for running an effective M&A sale process, the medium whereby companies are bought and sold in the marketplace. This discussion serves to provide greater context for the topics discussed earlier in the book as theoretical valuation methodologies and analytics are tested based on what a buyer can afford to pay . . . and ultimately decide to bid. We also describe how valuation analysis is used to frame the seller's price expectations, set guidelines for the range of acceptable bids, evaluate offers received, and, ultimately, guide negotiations of the final purchase price.

Chapter 7 focuses on buy-side M&A. It builds upon the fundamental valuation material discussed earlier in the book by performing detailed valuation and merger consequences analysis on ValueCo from an illustrative strategic buyer's perspective, BuyerCo. As the name suggests, merger consequences analysis centers on examining the pro forma effects of a given transaction on the acquirer.

Chapter 6: Sell-Side M&A The sale of a company, division, business, or collection of assets is a major event for its owners (shareholders), management, employees, and other stakeholders. It is an intense, time-consuming process with high stakes, usually spanning several months. Consequently, the seller typically hires an investment bank ("sell-side advisor") and its team of trained professionals to ensure that key objectives are met—namely an optimal mix of value maximization, speed of execution, and certainty of completion, among other deal-specific considerations. Prospective buyers also often hire an investment bank ("buy-side advisor") to perform valuation work, interface with the seller, and conduct negotiations, among other critical tasks.

The sell-side advisor is responsible for identifying the seller's priorities from the onset and crafts a tailored sale process accordingly. From an analytical perspective, a sell-side assignment requires a comprehensive valuation of the target using those methodologies discussed in this book. Perhaps the most basic decision, however, relates to whether to run a broad or targeted auction, or pursue a negotiated sale. Generally, an auction requires more upfront organization, marketing, process points, and resources than a negotiated sale with a single party. Consequently, Chapter 6 focuses primarily on the auction process.

Chapter 7: Buy-Side M&A Chapter 7 begins by discussing buyer M&A strategies and motivations, including deal rationale and synergies. We also discuss form of financing and deal structure, which are critical components for performing detailed buy-side M&A analysis. We then perform a comprehensive valuation and merger consequences analysis for ValueCo from the perspective of a strategic acquirer, BuyerCo. This analysis starts with an overview of the primary valuation methodologies for ValueCo discussed in Chapters 1–3 and 5—namely, comparable companies, precedent transactions, DCF, and LBO analysis. The results of these analyses are displayed on a graphic known as a "football field" for easy comparison and analysis.

The next level of detail in our buy-side M&A work involves analysis at various prices (AVP) and contribution analysis. AVP, also known as a valuation matrix, displays the implied multiples paid at a range of transaction values and offer prices (for public targets) at set intervals. Contribution analysis analyzes the financial "contributions" made by the acquirer and target to the pro forma entity prior to any transaction adjustments. We then conduct a detailed merger consequences analysis for ValueCo in order to fine-tune the ultimate purchase price, deal structure, and financing mix. This analysis examines the pro forma impact of the transaction on the acquirer. The impact on earnings is known as accretion/(dilution) analysis, while the impact on credit statistics is known as balance sheet effects.

Part Four: Initial Public Offerings (Chapters 8 & 9)

Part Four dives into the intricacies of initial public offerings. We kick off the discussion in Chapter 8 with an overview of the decision to go public, characteristics of strong IPO candidates, key participants, and key terms, as well as the nuances around running a dual-track process. We also address market developments around special purpose acquisition companies (SPACs) and direct listings. Once the IPO basics are addressed, we turn our focus to the stages of an IPO process, including critical analysis related to structure and valuation. Throughout, investment banks advise on all aspects of the IPO, culminating in the ultimate launch decision.

Chapter 8: Initial Public Offerings Chapter 8 provides an overview of the fundamentals of initial public offerings. An IPO represents the first time a company sells its stock to public investors. It is a transformational event for a company, its owners, and employees. The company and the way it operates will never be the same again. Once a company "goes public", its shares will trade daily on the open market where buyers and sellers determine its prevailing equity value in real time. Detailed business and financial information will be made public and subject to analysis. Management will conduct quarterly earnings calls and field questions from sell-side research analysts. They will also speak regularly with existing and potential new investors.

While IPO candidates vary broadly in terms of sector, size, and financial profile, they need to feature performance and growth attributes that public investors would find compelling. Is the company and its addressable market large enough to warrant attention? Is it a market leader? How exciting is the growth opportunity? Is the cycle entry point attractive? How capable is the management team? Market conditions must also be conducive. The number of IPO offerings over a given time period is strongly correlated to the performance of the overall stock market. The better the market, the more plentiful the IPO pipeline.

Chapter 9: The IPO Process As with an M&A sell-side, the IPO process is intense and time-consuming with high stakes for the company and its stakeholders. The typical process spans several months, although IPO-readiness activities and preparation may begin years in advance. Once the IPO decision has been made, the company chooses its team of investment banks, lawyers, accountants, and other key advisors. As with any other organized process, teamwork and cultural fit help ensure efficiency, quality, and success. Therefore, it is critical to get the right team in place upfront.

The IPO process consists of multiple stages and discrete milestones within each of these stages. There are numerous variations within this structure that allow the bookrunners to customize, as appropriate, for a given situation. In the event the company has long-standing banking relationships and current public audited financials (e.g., a public bond issuer), the prep stage can move quickly. On the other end of the spectrum, some companies may spend months or even years preparing their organization for an IPO. This extends to putting in place the right management and internal support, as well as getting the financials "IPO-ready". Proper company positioning is one of the foremost responsibilities for the deal team, most notably the bankers. This extends to IPO structure and valuation. Getting it right requires extensive thought, analysis, and market insight. Hence, the importance of choosing bankers that have a deep understanding of the company, sector, and equity market sentiment.

VALUECO SUMMARY FINANCIAL INFORMATION

Exhibits I.I through I.III display the historical and projected financial information for ValueCo. These financials—as well as the various valuation multiples, financing terms, and other financial statistics discussed throughout the book—are purely illustrative and designed to represent normalized economic and market conditions.

EXHIBIT I.I ValueCo Summary Historical Operating Data

($ in millions)

ValueCo Summary Historical Operating Data				
	Fiscal Year Ending December 31,			LTM
	2016	2017	2018	9/30/2019
Sales	**$2,600.0**	**$2,900.0**	**$3,200.0**	**$3,385.0**
% growth	*NA*	*11.5%*	*10.3%*	*NA*
Cost of Goods Sold	1,612.0	1,769.0	1,920.0	2,030.0
Gross Profit	**$988.0**	**$1,131.0**	**$1,280.0**	**$1,355.0**
% margin	*38.0%*	*39.0%*	*40.0%*	*40.0%*
Selling, General & Administrative	496.6	551.0	608.0	655.0
EBITDA	**$491.4**	**$580.0**	**$672.0**	**$700.0**
% margin	*18.9%*	*20.0%*	*21.0%*	*20.7%*
Depreciation & Amortization	155.0	165.0	193.0	200.0
EBIT	**$336.4**	**$415.0**	**$479.0**	**$500.0**
% margin	*12.9%*	*14.3%*	*15.0%*	*14.8%*
Capital Expenditures	114.4	116.0	144.0	152.3
% sales	*4.4%*	*4.0%*	*4.5%*	*4.5%*

Note: For modeling purposes (e.g., DCF analysis and LBO analysis), D&A is broken out separately from COGS & SG&A as its own line item.

EXHIBIT I.II ValueCo Summary Projected Operating Data

($ in millions)

ValueCo Summary Projected Operating Data						
	Fiscal Year Ending December 31,					
	2019E	2020E	2021E	2022E	2023E	2024E
Sales	**$3,450.0**	**$3,708.8**	**$3,931.3**	**$4,127.8**	**$4,293.0**	**$4,421.7**
% growth	*7.8%*	*7.5%*	*6.0%*	*5.0%*	*4.0%*	*3.0%*
Cost of Goods Sold	2,070.0	2,225.3	2,358.8	2,476.7	2,575.8	2,653.0
Gross Profit	**$1,380.0**	**$1,483.5**	**$1,572.5**	**$1,651.1**	**$1,717.2**	**$1,768.7**
% margin	*40.0%*	*40.0%*	*40.0%*	*40.0%*	*40.0%*	*40.0%*
Selling, General & Administrative	655.0	704.1	746.4	783.7	815.0	839.5
EBITDA	**$725.0**	**$779.4**	**$826.1**	**$867.4**	**$902.1**	**$929.2**
% margin	*21.0%*	*21.0%*	*21.0%*	*21.0%*	*21.0%*	*21.0%*
Depreciation & Amortization	207.0	222.5	235.9	247.7	257.6	265.3
EBIT	**$518.0**	**$556.9**	**$590.3**	**$619.8**	**$644.6**	**$663.9**
% margin	*15.0%*	*15.0%*	*15.0%*	*15.0%*	*15.0%*	*15.0%*
Capital Expenditures	155.3	166.9	176.9	185.8	193.2	199.0
% sales	*4.5%*	*4.5%*	*4.5%*	*4.5%*	*4.5%*	*4.5%*

EXHIBIT I.III ValueCo Summary Historical Balance Sheet Data

($ in millions)

ValueCo Summary Historical Balance Sheet Data	Fiscal Year Ended December 31,			As of	FYE
	2016	2017	2018	9/30/2019	2019E
Cash and Cash Equivalents	$627.1	$392.8	$219.8	$183.1	$250.0
Accounts Receivable	317.0	365.5	417.4	441.5	450.0
Inventories	441.6	496.8	556.5	588.4	600.0
Prepaid and Other Current Assets	117.0	142.1	162.3	171.7	175.0
Total Current Assets	**$1,502.7**	**$1,397.1**	**$1,356.0**	**$1,384.8**	**$1,475.0**
Property, Plant and Equipment, net	2,571.1	2,565.6	2,564.6	2,501.3	2,500.0
Goodwill	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0
Intangible Assets	1,018.3	974.8	926.8	891.8	875.0
Other Assets	150.0	150.0	150.0	150.0	150.0
Total Assets	**$6,242.1**	**$6,087.5**	**$5,997.4**	**$5,927.8**	**$6,000.0**
Accounts Payable	189.9	189.0	199.4	210.8	215.0
Accrued Liabilities	221.0	237.8	255.1	269.8	275.0
Other Current Liabilities	75.4	84.1	92.8	98.1	100.0
Total Current Liabilities	**$486.3**	**$510.9**	**$547.2**	**$578.8**	**$590.0**
Total Debt	2,500.0	2,150.0	1,800.0	1,500.0	1,500.0
Other Long-Term Liabilities	410.0	410.0	410.0	410.0	410.0
Total Liabilities	**$3,396.3**	**$3,070.9**	**$2,757.2**	**$2,488.8**	**$2,500.0**
Noncontrolling Interest	-	-	-	-	-
Shareholders' Equity	2,845.8	3,016.6	3,240.2	3,439.1	3,500.0
Total Liabilities and Equity	**$6,242.1**	**$6,087.5**	**$5,997.4**	**$5,927.8**	**$6,000.0**
Balance Check	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*

PART One

Valuation

CHAPTER 1

Comparable Companies Analysis

Comparable companies analysis ("comparable companies", "trading comps", or simply "comps") is one of the primary methodologies used for valuing a given focus company, division, business, or collection of assets ("target"). It provides a market benchmark against which a banker can establish valuation for a private company or analyze the value of a public company at a given point in time. Comps has a broad range of applications, most notably for various mergers & acquisitions (M&A) situations, initial public offerings (IPOs), restructurings, and investment decisions.

The foundation for comps is built upon the premise that similar companies provide a highly relevant reference point for valuing a given target due to the fact that they share key business and financial characteristics, performance drivers, and risks. Therefore, the banker can establish valuation parameters for the target by determining its relative positioning among peer companies. The core of this analysis involves selecting a universe of comparable companies for the target ("comparables universe"). These peer companies are benchmarked against one another and the target based on various financial statistics and ratios. Trading multiples are then calculated for the universe, which serve as the basis for extrapolating a valuation range for the target. This valuation range is calculated by applying the selected multiples to the target's relevant financial statistics.

While valuation metrics may vary by sector, this chapter focuses on the most widely used trading multiples. These multiples—such as enterprise value-to-earnings before interest, taxes, depreciation, and amortization (EV/EBITDA) and price-to-earnings (P/E)—utilize a measure of value in the numerator and a financial statistic in the denominator. While P/E is the most broadly recognized in circles outside Wall Street, multiples based on enterprise value are widely used by bankers because they are independent of capital structure and other factors unrelated to business operations (e.g., differences in tax regimes and certain accounting policies).

Comps is designed to reflect "current" valuation based on prevailing market conditions and sentiment. As such, it is often more relevant than *intrinsic valuation* techniques, such as the DCF (see Chapter 3). At the same time, market trading levels may be subject to periods of irrational investor sentiment that skew valuation either too high or too low. Furthermore, no two companies are exactly the same, so assigning a valuation based on the trading characteristics of similar companies may fail to accurately capture a given company's true value.

As a result, comps should be used in conjunction with the other valuation methodologies discussed in this book. A material disconnect between the derived valuation ranges from the various methodologies might be an indication that key assumptions or calculations need to be revisited. Or, it may indicate that you have discovered true valuation arbitrage in the market. Therefore, when performing comps and other valuation methodologies, it is imperative to diligently footnote key sources and assumptions both for review and defense of conclusions.

This chapter provides a highly practical, step-by-step approach to performing comps consistent with how this valuation methodology is performed in real world applications (see Exhibit 1.1). Once this framework is established, we walk through an illustrative comparable companies analysis using our target company, ValueCo (see Introduction for reference).

EXHIBIT 1.1 Comparable Companies Analysis Steps

Step I. Select the Universe of Comparable Companies
Step II. Locate the Necessary Financial Information
Step III. Spread Key Statistics, Ratios, and Trading Multiples
Step IV. Benchmark the Comparable Companies
Step V. Determine Valuation

SUMMARY OF COMPARABLE COMPANIES ANALYSIS STEPS

- **Step I. Select the Universe of Comparable Companies.** The selection of a universe of comparable companies for the target is the foundation of comps. While this exercise can be fairly simple and intuitive for companies in certain sectors, it can prove challenging for others whose peers are not readily apparent. To identify companies with similar business and financial characteristics, it is first necessary to gain a sound understanding of the target.

  As a starting point, the banker typically consults with peers or senior colleagues to see if a relevant set of comparable companies already exists internally. If beginning from scratch, the banker casts a broad net to review as many potential comparable companies as possible. This broader group is eventually narrowed, and then typically further refined to a subset of "closest comparables". A survey of the target's public competitors is generally a good place to start this exercise.

- **Step II. Locate the Necessary Financial Information.** Once the initial comparables universe is determined, the banker locates the financial information necessary to analyze the selected comparable companies and calculate ("spread[1]") key financial statistics, ratios, and trading multiples (see Step III). The primary data for calculating these metrics is compiled from various sources, including a company's SEC filings,[2] consensus research estimates, equity research reports, and press releases.

[1]The notion of "spreading" refers to performing calculations in a spreadsheet program such as Microsoft Excel.

[2]The Securities and Exchange Commission (SEC) is a federal agency created by the Securities Exchange Act of 1934 that regulates the U.S. securities industry. SEC filings can be located online at www.sec.gov.

- **Step III. Spread Key Statistics, Ratios, and Trading Multiples.** The banker is now prepared to spread key statistics, ratios, and trading multiples for the comparables universe. This involves calculating market valuation measures such as enterprise value and equity value, as well as key income statement items, such as EBITDA and net income. A variety of ratios and other metrics measuring profitability, growth, returns, and credit strength are also calculated at this stage. Selected financial statistics are then used to calculate trading multiples for the comparables.

  As part of this process, the banker needs to employ various financial concepts and techniques, including the calculation of *last twelve months* (LTM)[3] financial statistics, *calendarization* of company financials, and adjustments for *non-recurring items*. These calculations are imperative for measuring the comparables accurately on both an absolute and relative basis (see Step IV).

- **Step IV. Benchmark the Comparable Companies.** The next level of analysis requires an in-depth examination of the comparable companies in order to determine the target's relative ranking and closest comparables. This requires laying out the calculated financial statistics and ratios for the comparable companies (as calculated in Step III) alongside those of the target in spreadsheet form for easy comparison (see Exhibits 1.53 and 1.54). This exercise is known as "benchmarking".

  Benchmarking serves to determine the relative strength of the comparable companies versus one another and the target. The similarities and discrepancies in size, growth rates, margins, and leverage, for example, among the comparables and the target are closely examined. This analysis provides the basis for establishing the target's relative ranking as well as determining those companies most appropriate for framing its valuation. The trading multiples are also laid out in a spreadsheet form for benchmarking purposes (see Exhibits 1.2 and 1.55). At this point, it may become apparent that certain outliers need to be eliminated or that the comparables should be further tiered (e.g., on the basis of size, sub-sector, or ranging from closest to peripheral).

- **Step V. Determine Valuation.** The trading multiples of the comparable companies serve as the basis for deriving a valuation range for the target. The banker typically begins by using the means and medians for the relevant trading multiples (e.g., EV/EBITDA) as the basis for extrapolating an initial range. The high and low multiples for the comparables universe provide further guidance in terms of a potential ceiling or floor. The key to arriving at the tightest, most appropriate range, however, is to rely upon the multiples of the closest comparables as guideposts. Consequently, only a few carefully selected companies typically serve as the ultimate basis for valuation, with the broader group serving as additional reference points. As this process involves as much "art" as "science", industry veterans are typically consulted for guidance on the final decision. The chosen range is then applied to the target's relevant financial statistics to produce an implied valuation range.

[3]The sum of the prior four quarters of a company's financial performance, also known as Trailing Twelve Months (TTM).

EXHIBIT 1.2 Comparable Companies Analysis—Trading Multiples Output Page

ValueCo Corporation
Comparable Companies Analysis
($ in millions, except per share data)

Company	Ticker	Current Share Price	% of 52-wk. High	Equity Value	Enterprise Value	Enterprise Value / LTM Sales	Enterprise Value / 2019E Sales	Enterprise Value / 2020E Sales	Enterprise Value / LTM EBITDA	Enterprise Value / 2019E EBITDA	Enterprise Value / 2020E EBITDA	Enterprise Value / LTM EBIT	Enterprise Value / 2019E EBIT	Enterprise Value / 2020E EBIT	LTM EBITDA Margin	Total Debt / EBITDA	Price / LTM EPS	Price / 2019E EPS	Price / 2020E EPS	LT EPS Growth
Tier I: Specialty Chemicals																				
BuyerCo	BUY	$70.00	91%	$9,800	$11,600	1.8x	1.7x	1.6x	8.0x	7.8x	7.3x	9.1x	8.8x	8.2x	22%	1.5x	11.5x	11.1x	10.3x	7%
Sherman Co.	SHR	40.00	76%	5,600	8,101	1.4x	1.4x	1.3x	7.7x	7.7x	7.2x	10.8x	10.7x	10.1x	18%	3.0x	11.0x	10.6x	9.7x	9%
Pearl Corp.	PRL	68.50	95%	5,172	5,856	1.4x	1.4x	1.3x	7.0x	7.0x	6.5x	9.4x	9.4x	8.7x	20%	1.8x	13.1x	12.2x	11.1x	11%
Gasparro Corp.	JDG	50.00	80%	5,000	6,750	1.4x	1.4x	1.3x	7.5x	7.1x	6.6x	9.3x	8.8x	8.2x	19%	2.1x	10.7x	9.8x	9.1x	12%
Kumra Inc.	KUM	52.50	88%	4,852	5,345	1.7x	1.7x	1.5x	8.0x	7.9x	7.4x	10.6x	10.4x	9.7x	21%	1.3x	15.8x	13.6x	11.8x	10%
Mean						**1.5x**	**1.5x**	**1.4x**	**7.7x**	**7.5x**	**7.0x**	**9.8x**	**9.6x**	**9.0x**	**20%**	**1.9x**	**12.4x**	**11.5x**	**10.4x**	**10%**
Median						**1.4x**	**1.4x**	**1.3x**	**7.7x**	**7.7x**	**7.2x**	**9.4x**	**9.4x**	**8.7x**	**20%**	**1.8x**	**11.5x**	**11.1x**	**10.3x**	**10%**
Tier II: Commodity / Diversified Chemicals																				
Falloon Group	FLN	$31.00	87%	$7,480	$11,254	1.0x	1.0x	0.9x	6.9x	7.0x	6.7x	10.8x	11.0x	10.5x	14%	2.5x	13.3x	12.4x	10.8x	5%
Goodson Corp.	GDS	64.00	83%	4,160	5,660	1.2x	1.2x	1.1x	7.4x	7.5x	7.2x	10.8x	11.0x	10.4x	16%	2.9x	16.1x	15.4x	13.5x	9%
Pryor Industries	PRI	79.00	88%	3,926	4,166	1.1x	1.2x	1.1x	7.3x	7.4x	7.1x	9.9x	10.1x	9.6x	15%	1.1x	14.3x	13.9x	12.7x	10%
Lanzarone Global	LNZ	32.25	95%	3,230	3,823	1.0x	1.0x	1.0x	6.6x	6.7x	6.4x	8.9x	9.0x	8.6x	16%	1.3x	11.5x	10.7x	9.7x	8%
McMenamin & Co.	MCM	33.50	80%	3,193	3,193	1.0x	0.9x	0.8x	9.0x	8.4x	7.5x	14.2x	13.1x	11.8x	11%	1.2x	22.2x	19.3x	16.8x	12%
Mean						**1.1x**	**1.1x**	**1.0x**	**7.4x**	**7.4x**	**7.0x**	**10.9x**	**10.8x**	**10.2x**	**14%**	**1.8x**	**15.5x**	**14.3x**	**12.7x**	**9%**
Median						**1.0x**	**1.0x**	**1.0x**	**7.3x**	**7.4x**	**7.1x**	**10.8x**	**11.0x**	**10.4x**	**15%**	**1.3x**	**14.3x**	**13.9x**	**12.7x**	**9%**
Tier III: Small-Cap Chemicals																				
S. Momper & Co.	MOMP	$28.00	95%	$2,240	$2,921	1.4x	1.4x	1.2x	7.7x	7.4x	6.7x	9.9x	9.5x	8.6x	18%	2.6x	14.2x	14.4x	13.4x	5%
Adler Worldwide	ADL	10.50	80%	1,217	1,463	0.9x	1.0x	0.9x	6.0x	6.1x	5.8x	8.0x	8.1x	7.7x	16%	1.6x	11.3x	12.2x	11.3x	7%
Schachter & Sons	STM	4.50	89%	1,125	1,674	1.0x	0.9x	0.8x	7.0x	6.5x	5.7x	9.8x	9.1x	7.9x	14%	2.5x	12.2x	11.3x	10.0x	11%
Girshin Holdings	MGP	50.00	67%	1,035	1,298	0.8x	0.8x	0.7x	7.3x	6.8x	6.1x	11.5x	10.7x	9.7x	11%	1.8x	16.5x	15.6x	14.2x	8%
Crespin International	MCR	27.00	80%	872	1,222	0.8x	0.8x	0.7x	6.4x	6.0x	5.4x	9.2x	8.6x	7.7x	13%	2.1x	11.8x	11.6x	10.5x	6%
Mean						**1.0x**	**1.0x**	**0.9x**	**6.9x**	**6.6x**	**5.9x**	**9.7x**	**9.2x**	**8.3x**	**14%**	**2.1x**	**13.2x**	**13.0x**	**11.9x**	**7%**
Median						**0.9x**	**0.9x**	**0.8x**	**7.0x**	**6.5x**	**5.8x**	**9.8x**	**9.1x**	**7.9x**	**14%**	**2.1x**	**12.2x**	**12.2x**	**11.3x**	**7%**
Overall																				
Mean						**1.2x**	**1.2x**	**1.1x**	**7.3x**	**7.2x**	**6.6x**	**10.1x**	**9.9x**	**9.2x**	**16%**	**2.0x**	**13.7x**	**12.9x**	**11.7x**	**9%**
Median						**1.1x**	**1.2x**	**1.1x**	**7.3x**	**7.1x**	**6.7x**	**9.9x**	**9.5x**	**8.7x**	**16%**	**1.8x**	**13.1x**	**12.2x**	**11.1x**	**9%**
High						**1.8x**	**1.7x**	**1.6x**	**9.0x**	**8.4x**	**7.5x**	**14.2x**	**13.1x**	**11.8x**	**22%**	**3.0x**	**22.2x**	**19.3x**	**16.8x**	**12%**
Low						**0.8x**	**0.8x**	**0.7x**	**6.0x**	**6.0x**	**5.4x**	**8.0x**	**8.1x**	**7.7x**	**11%**	**1.1x**	**10.7x**	**9.8x**	**9.1x**	**5%**

Source: Company filings, Bloomberg, Consensus Estimates
Note: Last twelve months data based on September 30, 2019. Estimated annual financial data based on a calendar year.

STEP I. SELECT THE UNIVERSE OF COMPARABLE COMPANIES

The selection of the right universe of comparable companies is the foundation for performing trading comps. To find companies with similar business and financial characteristics, you must first truly understand the target. At its base, the methodology for determining comparable companies is relatively intuitive. Companies in the same sector (or, preferably, "sub-sector") with similar size tend to serve as good comparables. While this can be a fairly simple exercise for certain companies, it may prove challenging for others with no readily apparent peers.

For a target with no clear, publicly traded comparables, the banker seeks companies outside the target's core sector that share business and financial characteristics on some fundamental level. For example, a medium-sized manufacturer of residential windows may have limited or no truly direct publicly traded peers in terms of products, namely companies that produce windows. If the universe is expanded to include companies that manufacture building products, serve homebuilders, or have exposure to the housing cycle, however, the probability of locating companies with similar business drivers is increased. In this case, the list of potential comparables could be expanded to include manufacturers of related building products such as decking, roofing, siding, doors, and cabinets.

Study the Target

The process of learning the in-depth "story" of the target should be exhaustive. Toward this end, the banker is encouraged to read and study as much company- and sector-specific material as possible. *The actual selection of comparable companies should only begin once this research is completed.*

For targets that are public registrants,[4] annual (10-K) and quarterly (10-Q) SEC filings, consensus research estimates, equity and fixed income research reports, press releases, earnings call transcripts, investor presentations,[5] and corporate websites provide key business and financial information. Private companies present a greater challenge as the banker is forced to rely upon sources such as corporate websites, sector research reports, news runs, and trade journals for basic company data. Public competitors' SEC filings, research reports, and investor presentations may also serve as helpful sources of information on private companies. In an organized M&A sale process[6] for a private company, however, the banker is provided with detailed business and financial information on the target (see Chapter 6).

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[4]Public or publicly traded companies refer to those listed on a public stock exchange where their shares can be traded. Public filers ("public registrants"), however, may include privately held companies that are issuers of public debt securities and, therefore, subject to SEC disclosure requirements.

[5]Presentations at investment conferences or regular performance reports, typically posted on a company's corporate website. Investor presentations may also be released for significant M&A events or as part of Regulation FD requirements. They are typically posted on the company's corporate website under "Investor Relations" and filed in an 8-K (current report).

[6]A process through which a target is marketed to prospective buyers, typically run by an investment banking firm (see Chapter 6).

Identify Key Characteristics of the Target for Comparison Purposes

A simple framework for studying the target and selecting comparable companies is shown in Exhibit 1.3. This framework, while by no means exhaustive, is designed to determine commonality with other companies by profiling and comparing key business and financial characteristics.

EXHIBIT 1.3 Business and Financial Profile Framework

Business Profile	Financial Profile
▪ Sector	▪ Size
▪ Products and Services	▪ Profitability
▪ Customers and End Markets	▪ Growth Profile
▪ Distribution Channels	▪ Return on Investment
▪ Geography	▪ Credit Profile

Business Profile

Companies that share core business characteristics tend to serve as good comparables. These core traits include sector, products and services, customers and end markets, distribution channels, and geography.

Sector

Sector refers to the industry or markets in which a company operates (e.g., consumer products, financials, healthcare, industrials, and technology). A company's sector can be further divided into sub-sectors, which facilitates the identification of the target's closest comparables. Within the industrials sector, for example, there are numerous sub-sectors, such as aerospace and defense, automotive, building products, chemicals, and paper and packaging. Even these sub-sectors can be further segmented—for example, chemicals can be divided into specialty and commodity chemicals. For companies with distinct business divisions, the segmenting of comparable companies by sub-sector may be critical for valuation.

A company's sector conveys a great deal about its key drivers, risks, and opportunities. For example, a cyclical sector such as oil & gas will have dramatically different earnings volatility from consumer staples. On the other hand, cyclical or highly fragmented sectors may present growth opportunities that are unavailable to companies in more stable or consolidated sectors. The proper identification and classification of the target's sector and sub-sector is an essential step toward locating comparable companies.

Products and Services

A company's products and services are at the core of its business model. Accordingly, companies that produce similar products or provide similar services typically serve as good comparables. Products are commodities or value-added goods that a company creates, produces, or refines. Examples of products include auto supplies, lumber, oil, machinery, prescription drugs, and steel. Services are acts or functions performed by one entity for the benefit of another. Examples of common services include banking,

consulting, installation, lodging, facilities maintenance, and transportation. Many companies provide both products and services to their customers, while others offer one or the other. Similarly, some companies offer a diversified product and/or service mix, while others are more focused.

Within a given sector or sub-sector, comparable companies may be tiered according to their products and services. For example, within the chemicals sector, specialty chemicals producers tend to consistently trade at a premium to commodity chemicals producers. Hence, they are often grouped together in a tighter comparables category within the broader chemicals universe.

Customers and End Markets

Customers A company's customers refer to the purchasers of its products and services. Companies with a similar customer base tend to share similar opportunities and risks. For example, companies supplying automobile manufacturers abide by certain manufacturing and distribution requirements, and are subject to the automobile purchasing cycles and trends.

The quantity and diversity of a company's customers are also important. Some companies serve a broad customer base while others may target a specialized or niche market. While it is generally positive to have low customer concentration from a risk management perspective, it is also beneficial to have a stable customer core to provide visibility and comfort regarding future revenues.

End Markets A company's end markets refer to the broad underlying markets into which it sells its products and services. For example, a plastics manufacturer may sell into several end markets, including automotive, construction, consumer products, medical devices, and packaging. End markets need to be distinguished from customers. For example, a company may sell into the housing end market, but to retailers or suppliers as opposed to homebuilders.

A company's performance is generally tied to economic and other factors that affect its end markets. A company that sells products into the housing end market is susceptible to macroeconomic factors that affect the overall housing cycle, such as interest rates and unemployment levels. Therefore, companies that sell products and services into the same end markets generally share a similar performance outlook, which is important for determining appropriate comparable companies.

Distribution Channels

Distribution channels are the avenues through which a company sells its products and services to the end user. As such, they are a key driver of operating strategy, performance, and, ultimately, value. Companies that sell primarily to the wholesale channel, for example, often have significantly different organizational and cost structures from those selling directly to retailers or end users. Selling to a superstore or value retailer requires a physical infrastructure, salesforce, and logistics that may be unnecessary for serving the professional or wholesale channels.

Some companies sell at several levels of the distribution chain, such as wholesale, retail, online, and direct-to-customer. A flooring manufacturer, for example, may distribute its products through selected wholesale distributors and retailers, as well as directly to homebuilders and end users.

Geography

Companies that are based in (and sell to) different regions of the world often differ substantially in terms of fundamental business drivers and characteristics. These may include growth rates, macroeconomic environment, competitive dynamics, path(s)-to-market, organizational and cost structure, and potential opportunities and risks. Such differences—which result from local demographics, regulatory regimes, consumer buying patterns and preferences, and cultural norms—can vary greatly from country to country and, particularly, from continent to continent. Consequently, there are often valuation disparities for similar companies in different global regions or jurisdictions.[7] For comps, bankers tend to group U.S.-based (or focused) companies in a separate category from European- or Asian-based companies even if their basic business models are the same.

For example, a banker seeking comparable companies for a U.S. retailer would focus primarily on U.S. companies with relevant foreign companies providing peripheral guidance. This geographic grouping is slightly less applicable for truly global industries such as oil and aluminum, for example, where domicile is less indicative than global commodity prices and supply/demand dynamics. Even in these instances, however, valuation disparities by geography are often evident.

Financial Profile

Key financial characteristics must also be examined both as a means of understanding the target and identifying the best comparable companies.

Size

Size is typically measured in terms of market valuation (e.g., equity value and enterprise value), as well as key financial statistics (e.g., sales, gross profit, EBITDA, EBIT, and net income). Companies of similar size in a given sector are more likely to have similar multiples than companies with significant size discrepancies. This reflects the fact that companies of similar size are also likely to be analogous in other respects (e.g., economies of scale, purchasing power, pricing leverage, customers, growth prospects, and the trading liquidity of their shares in the stock market).

Consequently, differences in size often map to differences in valuation. Hence, the comparables are often tiered based on size categories. For example, companies with under $5 billion in equity value (or enterprise value, sales) may be placed in one group and those with greater than $5 billion in a separate group. This tiering, of course, assumes a sufficient number of comparables to justify organizing the universe into sub-groups.

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[7]Other factors, such as the local capital markets conditions, including volume, liquidity, transparency, shareholder base, and investor perceptions, as well as political risk, also contribute to these disparities.

Profitability

A company's profitability measures its ability to convert sales into profit. Profitability ratios ("margins") employ a measure of profit in the numerator, such as gross profit, EBITDA, EBIT, or net income, and sales in the denominator.[8] As a general rule, for companies in the same sector, higher profit margins translate into higher valuations, all else being equal. Consequently, determining a company's relative profitability versus peers is a core component of the benchmarking analysis (see Step IV).

Growth Profile

A company's growth profile, as determined by its historical and estimated future financial performance, is a critical driver of valuation. Equity investors reward high growth companies with higher trading multiples than slower growing peers. They also discern whether the growth is primarily organic or acquisition-driven, with the former generally viewed as preferable. In assessing a company's growth profile, historical and estimated future growth rates for various financial statistics (e.g., sales, EBITDA, and earnings per share (EPS)) are examined at selected intervals. For mature public companies, EPS growth rates are typically more meaningful. For early stage or emerging companies with little or no earnings, however, sales or EBITDA growth trends may be more relevant.

Return on Investment

Return on investment (ROI) measures a company's ability to provide earnings (or returns) to its capital providers. ROI ratios employ a measure of profitability (e.g., EBIT, NOPAT,[9] or net income) in the numerator and a measure of capital (e.g., invested capital, shareholders' equity, or total assets) in the denominator. The most commonly used ROI metrics are return on invested capital (ROIC), return on equity (ROE), and return on assets (ROA). Dividend yield, which measures the dividend payment that a company's shareholders receive for each share owned, is another type of return metric.

Credit Profile

A company's credit profile refers to its creditworthiness as a borrower. It is typically measured by metrics relating to a company's overall debt level ("leverage") as well as its ability to make interest payments ("coverage"), and reflects key company and sector-specific benefits and risks. Moody's Investors Service (Moody's), Standard & Poor's (S&P), and Fitch Ratings (Fitch) are the three primary independent credit rating agencies that provide formal assessments of a company's credit profile.

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[8]Depending on the sector, profitability may be measured on a per unit basis (e.g., per ton or pound).
[9]Net operating profit after taxes, also known as tax-effected EBIT or earnings before interest after taxes (EBIAT).

Screen for Comparable Companies

Once the target's basic business and financial characteristics are researched and understood, the banker uses multiple resources to screen for potential comparable companies. At the initial stage, the focus is on identifying companies with a similar business profile. While basic financial information (e.g., sales, enterprise value, or equity value) should be assessed early on, more detailed financial benchmarking is performed in Step IV.

Investment banks generally have established lists of comparable companies by sector containing relevant multiples and other financial data, which are updated on a quarterly basis and for appropriate company-specific actions. Often, however, the banker needs to start from scratch. In these cases, an examination of the target's public competitors is usually the best place to begin. Competitors generally share key business and financial characteristics and are susceptible to similar opportunities and risks. Public companies typically discuss their primary competitors in their 10-Ks, annual proxy statement (DEF14A),[10] and, potentially, in investor presentations. Furthermore, equity research reports, especially those known as *initiating coverage*,[11] often explicitly list the research analyst's views on the target's comparables and/or primary competitors. For private targets, public competitors' 10-Ks, proxy statements, investor presentations, research reports, and broader industry reports are often helpful sources.

An additional source for locating comparables is the proxy statement for a relatively recent M&A transaction in the sector ("merger proxy"),[12] as it contains excerpts from a *fairness opinion*. As the name connotes, a fairness opinion opines on the "fairness" of the purchase price and deal terms offered by the acquirer from a financial perspective (see Chapter 6). The fairness opinion is supported by a detailed overview of the methodologies used to perform a valuation of the target, typically including comparable companies, precedent transactions, DCF analysis, and LBO analysis, if applicable.[13] The trading comps excerpt from the fairness opinion generally provides a list of the comparable companies used to value the M&A target as well as the selected range of multiples used in the valuation analysis.

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[10]A company's annual proxy statement typically provides a suggested peer group of companies that is used for benchmarking purposes.

[11]An initiating coverage equity research report refers to the first report published by an equity research analyst beginning coverage on a particular company. This report often provides a comprehensive business description, sector analysis, and commentary.

[12]A solicitation of shareholder votes in a business combination is initially filed under SEC Form PREM14A (preliminary merger proxy statement) and then DEFM14A (definitive merger proxy statement).

[13]Not all companies are LBO candidates. See Chapter 4 for an overview of the characteristics of strong LBO candidates.

The banker may also screen for companies that operate in the target's sector using SIC, NAICS, or other industry codes.[14] This type of screen is typically used either to establish a broad initial universe of comparables or to ensure that no potential companies have been overlooked. Sector reports published by the credit rating agencies (e.g., Moody's, S&P, and Fitch) may also provide helpful lists of peer companies.

In addition to the aforementioned, senior bankers and industry experts are perhaps the most valuable resources. Given their sector knowledge and familiarity with the target, a brief conversation is usually sufficient to provide a strong starting point. Toward the end of the process—once the legwork to craft and refine a robust list of comparables has been completed—a senior banker should be called upon to provide the finishing touches.

At this stage of the process, there may be sufficient information to eliminate certain companies from the group or tier the selected companies by size, business focus, or geography, for example.

STEP II. LOCATE THE NECESSARY FINANCIAL INFORMATION

This section provides an overview of the relevant sources for locating the necessary financial information to calculate key financial statistics, ratios, and multiples for the selected comparable companies (see Step III). The most common sources for public company financial data are SEC filings (such as 10-Ks, 10-Qs, and 8-Ks), as well as earnings announcements, investor presentations, equity research reports, consensus estimates, and press releases. A summary list of where to locate key financial data is provided in Exhibit 1.4.

In trading comps, valuation is driven on the basis of both historical performance (e.g., LTM financial data) and expected future performance (e.g., consensus estimates for future calendar years). Depending on the sector and point in the cycle, however, financial projections tend to be more meaningful. Estimates for forward-year financial performance are typically sourced from consensus estimates[15] as well as individual company equity research reports. In the context of an M&A or debt capital raising transaction, by contrast, more emphasis is placed on LTM financial performance. LTM financial information is calculated on the basis of data obtained from a company's public filings (see Exhibits 1.24 and 1.25).

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[14]Standard Industrial Classification (SIC) is a system established by the U.S. government for classifying the major business operations of a company with a numeric code. Some bankers use the newer North American Industry Classification System (NAICS) codes in lieu of SIC codes. The SEC, however, still uses SIC codes.

[15]Bloomberg Estimates, Refinitiv IBES (Institutional Brokers Estimate System), S&P Capital IQ Estimates, and Thomson First Call provide consensus analyst estimates for thousands of publicly traded companies.

SEC Filings: 10-K, 10-Q, 8-K, and Proxy Statement

As a general rule, the banker uses SEC filings to source historical financial information for comparable companies. This financial information is used to determine historical sales, gross profit, EBITDA, EBIT, and net income (and EPS) on both an annual and LTM basis. SEC filings are also the primary source for other key financial items such as balance sheet data, capital expenditures ("capex"), basic shares outstanding, stock options/warrants data, and information on non-recurring items. SEC filings can be obtained through numerous mediums, including a company's corporate website (typically through an "Investor Relations" link) as well as EDGAR[16] and other financial information services.

10-K (Annual Report) The 10-K is an annual report filed with the SEC by a public registrant that provides a comprehensive overview of the company and its prior year performance.[17] It is required to contain an exhaustive list of disclosure items including, but not limited to, a detailed business description, management's discussion & analysis (MD&A),[18] audited financial statements[19] and supplementary data, outstanding debt detail, basic shares outstanding, and stock options/warrants data. It also contains an abundance of other pertinent information about the company and its sector, such as business segment detail, customers, end markets, competition, insight into material opportunities (and challenges and risks), significant recent events, and acquisitions.

10-Q (Quarterly Report) The 10-Q is a quarterly report filed with the SEC by a public registrant that provides an overview of the most recent quarter and year-to-date (YTD) period.[20] It is less comprehensive than the 10-K, but provides financial statements as well as MD&A relating to the company's financial performance for the most recent quarter and YTD period versus the prior year periods.[21] The 10-Q also provides the most recent share count information and may also contain the most recent stock options/warrants data. For detailed financial information on a company's final quarter of the fiscal year, the banker refers to the 8-K containing the fourth quarter earnings press release that usually precedes the filing of the 10-K.

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[16]The Electronic Data Gathering, Analysis, and Retrieval (EDGAR) system performs automated collection, validation, indexing, acceptance, and forwarding of submissions by companies and others who are required to file forms with the SEC.

[17]The deadline for the filing of the 10-K ranges from 60 to 90 days after the end of a company's fiscal year depending on the size of its public float.

[18]A section in a company's 10-K and 10-Q that provides a discussion and analysis of the prior reporting period's financial performance. It also contains forward-looking information about the possible future effects of known and unknown events, market conditions, and trends.

[19]The financial statements in a 10-K are audited and certified by a Certified Public Accountant (CPA) to meet the requirements of the SEC.

[20]The deadline for the filing of the 10-Q ranges from 40 to 45 days after the end of a company's fiscal quarter depending on the size of its public float. The 10-K, instead of the 10-Q, is filed after the end of a company's fiscal fourth quarter.

[21]The financial statements in a company's 10-Q are reviewed by a CPA, but not audited.

8-K (Current Report) The 8-K, or current report, is filed by a public registrant to report the occurrence of *material* corporate events or changes ("triggering event") that are of importance to shareholders or security holders.[22] For the purposes of preparing trading comps, key triggering events include, but are not limited to, earnings announcements, entry into a definitive purchase/sale agreement,[23] completion of an acquisition or disposition of assets, capital markets transactions, investor days,[24] and Regulation FD disclosure requirements.[25]The corresponding 8-Ks for these events often contain important information necessary to calculate a company's updated financial statistics, ratios, and trading multiples that may not be reflected in the most recent 10-K or 10-Q (see "Adjustments for Recent Events").

Proxy Statement A proxy statement is a document that a public company sends to its shareholders prior to a shareholder meeting containing material information regarding matters on which the shareholders are expected to vote. It is also filed with the SEC on Schedule 14A. For the purposes of spreading trading comps, the annual proxy statement provides a basic shares outstanding count that may be more recent than that contained in the latest 10-K or 10-Q. As previously discussed, the annual proxy statement also typically contains a suggested peer group for benchmarking purposes.

Equity Research

Research Reports Equity research reports provide individual analyst estimates of future company performance, which may be used to calculate forward-looking multiples. They generally include estimates of sales, EBITDA and/or EBIT, and EPS for future quarters and the future two- or three-year period (on an annual basis). More comprehensive reports provide additional estimated financial information from the research analyst's model, including key items from the income statement, balance sheet, and cash flow statement. These reports may also provide segmented financial projections, such as sales and EBIT at the business division level.

Equity research reports often provide commentary on non-recurring items and recent M&A and capital markets transactions, which are helpful for determining *pro forma* adjustments and normalizing financial data. They may also provide helpful sector and market information, as well as explicitly list the research analyst's view on the company's comparables universe. Initiating coverage research reports tend to be more comprehensive than normal interim reports. As a result, it is beneficial to mine these reports for financial, market, and competitive insights.

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[22]Depending on the particular triggering event, the 8-K is typically filed within four business days after occurrence.

[23]The legal contract between a buyer and seller detailing the terms and conditions of an M&A transaction. See Chapter 6 for additional information.

[24]From time to time, companies hold investor days to tell their in-depth story directly to current and prospective shareholders. These are typically large public events spanning several hours and can include product demos and facility tours (if held on site). They are led by the senior management team, often including division heads and business development executives.

[25]Regulation FD (Fair Disclosure) provides that when a public filer discloses material nonpublic information to certain persons, as defined by the SEC, it must make public disclosure of that information typically through the filing of an 8-K.

Research reports can be located through various subscription financial information services. If you're currently working at an investment bank, you should have access to the bank's research reports through the internal portal. Also, if you're an individual investor reading this book, you should have access to research through your brokerage account(s) as most brokerage houses provide customers with access to in-house or affiliate research.

Consensus Estimates Consensus research estimates for selected financial statistics are widely used by bankers as the basis for calculating forward-looking trading multiples in trading comps. The primary sources for consensus estimates are Bloomberg Estimates, Refinitiv IBES, S&P Capital IQ Estimates, and Thomson First Call, among other financial information services. Investment banks typically choose one source or the other so as to maintain consistency throughout the analysis.[26]

Press Releases and News Runs

A company issues a press release when it has something important to report to the public. Standard press releases include earnings announcements, declaration of dividends, and management changes, as well as M&A and capital markets transactions. Earnings announcements, which are accompanied by the filing of an 8-K, are typically issued prior to the filing of a 10-K or 10-Q. Therefore, the banker relies upon the financial data provided in the earnings announcement to update trading comps in a timely manner. A company may also release an investor presentation to accompany its quarterly earnings call, which may be helpful in readily identifying key financial data and obtaining additional color and commentary. In the event that certain financial information is not provided in the earnings press release, the banker must wait until the filing of the 10-K or 10-Q for complete information. A company's press releases and recent news articles are available on its corporate website.

Financial Information Services

As discussed throughout this section, financial information services a key source for obtaining SEC filings, research reports, consensus estimates, and press releases, among other items. They are also a primary source for current and historical company share price information, which is essential for calculating equity value and determining a company's current share price as a percentage of its 52-week high. Corporate credit ratings information can be gleaned form various financial information services. If practical, however, we suggest sourcing credit ratings directly from the official Moody's, S&P, and Fitch websites and attributing such information to its original sources.[27]

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[26]Once a given consensus estimates source is selected, it is important to screen individual estimates for obsolescent data and outliers. For example, if a company has recently made a transformative acquisition, some analysts may have revised their estimates accordingly, while others may have not. Bloomberg and other sources allow the banker to view individual estimates (and the date when they were posted), which allows for the identification and removal of inconsistent estimates as appropriate.

[27]Access to these websites requires a subscription.

Summary of Financial Data Primary Sources

Exhibit 1.4 provides a summary of the primary sources used to obtain the necessary financial information to perform trading comps.

EXHIBIT 1.4 Summary of Financial Data Primary Sources

Information Item	Source
Income Statement Data	
Sales Gross Profit EBITDA[a] EBIT Net Income / EPS	Most recent 10-K, 10-Q, 8-K, Press Release
Research Estimates	Bloomberg Estimates, Refinitiv IBES, S&P Capital IQ Estimates, Thomson First Call, individual equity research reports
Balance Sheet Data	
Cash Balance Debt Balance Shareholders' Equity	Most recent 10-K, 10-Q, 8-K, Press Release
Cash Flow Statement Data	
Depreciation & Amortization Capital Expenditures	Most recent 10-K, 10-Q, 8-K, Press Release
Share Data	
Basic Shares Outstanding	10-K, 10-Q, or Proxy Statement, whichever is most recent
Options and Warrants Data	10-K or 10-Q, whichever is more recent
Market Data	
Share Price Data	Financial information service
Credit Ratings	Rating agencies' websites

[a] As a non-GAAP (generally accepted accounting principles) financial measure, EBITDA is not reported on a public filer's income statement. It may, however, be disclosed as supplemental information in the company's public filings.

STEP III. SPREAD KEY STATISTICS, RATIOS, AND TRADING MULTIPLES

Once the necessary financial information for each of the comparables has been located, it is entered into an input page (see Exhibit 1.5).[28] This sample input page is designed to assist the banker in calculating the key financial statistics, ratios, and multiples for the comparables universe.[29] The input page data, in turn, feeds into output sheets that are used to benchmark the comparables (see Exhibits 1.53, 1.54, and 1.55).

In the pages that follow, we discuss the financial data displayed on the sample input sheet, as well as the calculations behind them. We also describe the mechanics for calculating LTM financial statistics, calendarizing company financials, and adjusting for non-recurring items and recent events.

Calculation of Key Financial Statistics and Ratios

In this section, we outline the calculation of key financial statistics, ratios, and other metrics in accordance with the financial profile framework introduced in Step I.

- Size (Market Valuation: equity value and enterprise value; and Key Financial Data: sales, gross profit, EBITDA, EBIT, and net income)
- Profitability (gross profit, EBITDA, EBIT, and net income margins)
- Growth Profile (historical and estimated growth rates)
- Return on Investment (ROIC, ROE, ROA, and dividend yield)
- Credit Profile (leverage ratios, coverage ratios, and credit ratings)

[28]For modeling/data entry purposes, manual inputs are typically formatted in blue font and yellow shading, while formula cells (calculations) are in black font (electronic versions of our models are available on our website, www.wiley.com/go/investmentbanking3e).

[29]This template should be adjusted as appropriate in accordance with the specific company/sector (see Exhibit 1.33).

EXHIBIT 1.5 Sample Comparable Company Input Page

Company A (Nasdaq:AAA)

Input Page

($ in millions, except per share data)

Business Description

[to come]

General Information	
Company Name	Company A
Ticker	AAA
Stock Exchange	Nasdaq
Fiscal Year Ending	Dec-31
Moody's Corporate Rating	NA
S&P Corporate Rating	NA
Predicted Beta	1.00
Marginal Tax Rate	*25.0%*

Selected Market Data		
Current Price	1/1/2000	-
% of 52-week High		*NA*
52-week High Price	1/1/2000	-
52-week Low Price	1/1/2000	-
Dividend Per Share (MRQ)		-
Fully Diluted Shares Outstanding		-
Equity Value		**-**
Plus: Total Debt		-
Plus: Preferred Stock		-
Plus: Noncontrolling Interest		-
Less: Cash and Cash Equivalents		-
Enterprise Value		**-**

Trading Multiples	LTM 9/30/2019	NFY 2019E	NFY+1 2020E	NFY+2 2021E
EV/Sales	NA	NA	NA	NA
Metric	-	-	-	-
EV/EBITDA	NA	NA	NA	NA
Metric	-	-	-	-
EV/EBIT	NA	NA	NA	NA
Metric	-	-	-	-
P/E	NA	NA	NA	NA
Metric	-	-	-	-
FCF Yield	*NA*	*NA*	*NA*	*NA*
Metric	-	-	-	-

LTM Return on Investment Ratios	
Return on Invested Capital	-
Return on Equity	-
Return on Assets	-
Implied Annual Dividend Per Share	*NA*

LTM Credit Statistics	
Debt/Total Capitalization	-
Total Debt/EBITDA	-
Net Debt/EBITDA	-
EBITDA/Interest Expense	-
(EBITDA-capex)/Interest Expense	-
EBIT/Interest Expense	-

Growth Rates	Sales	EBITDA	FCF	EPS
Historical				
1-year	-	-	-	-
2-year CAGR	-	-	-	-
Estimated				
1-year	-	-	-	-
2-year CAGR	-	-	-	-
Long-term				*NA*

Reported Income Statement

	Fiscal Year Ending December 31, 2016A	2017A	2018A	Prior Stub 9/30/2018	Current Stub 9/30/2019	LTM 9/30/2019
Sales	-	-	-	-	-	-
COGS (incl. D&A)	-	-	-	-	-	-
Gross Profit	-	-	-	-	-	-
SG&A	-	-	-	-	-	-
Other Expense / (Income)	-	-	-	-	-	-
EBIT	-	-	-	-	-	-
Interest Expense	-	-	-	-	-	-
Pre-tax Income	-	-	-	-	-	-
Income Taxes	-	-	-	-	-	-
Noncontrolling Interest	-	-	-	-	-	-
Preferred Dividends	-	-	-	-	-	-
Net Income	-	-	-	-	-	-
Effective Tax Rate	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*
Weighted Avg. Diluted Shares	-	-	-	-	-	-
Diluted EPS	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

Adjusted Income Statement

Reported Gross Profit	-	-	-	-	-	-
Non-recurring Items in COGS	-	-	-	-	-	-
Adj. Gross Profit	-	-	-	-	-	-
% margin	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*
Reported EBIT	-	-	-	-	-	-
Non-recurring Items in COGS	-	-	-	-	-	-
Other Non-recurring Items	-	-	-	-	-	-
Adjusted EBIT	-	-	-	-	-	-
% margin	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*
Depreciation & Amortization	-	-	-	-	-	-
Adjusted EBITDA	-	-	-	-	-	-
% margin	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*
Reported Net Income	-	-	-	-	-	-
Non-recurring Items in COGS	-	-	-	-	-	-
Other Non-recurring Items	-	-	-	-	-	-
Non-operating Non-rec. Items	-	-	-	-	-	-
Tax Adjustment	-	-	-	-	-	-
Adjusted Net Income	-	-	-	-	-	-
% margin	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*
Adjusted Diluted EPS	-	-	-	-	-	-

Cash Flow Statement Data

Cash From Operations	-	-	-	-	-	-
Capital Expenditures	-	-	-	-	-	-
% sales	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*
Free Cash Flow	-	-	-	-	-	-
% margin	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*
FCF / Share	-	-	-	-	-	-
Depreciation & Amortization	-	-	-	-	-	-
% sales	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*

Balance Sheet Data	2018A	9/30/2019
Cash and Cash Equivalents	-	-
Accounts Receivable	-	-
Inventories	-	-
Prepaids and Other Current Assets	-	-
Total Current Assets	-	-
Property, Plant and Equipment, net	-	-
Goodwill and Intangible Assets	-	-
Other Assets	-	-
Total Assets	-	-
Accounts Payable	-	-
Accrued Liabilities	-	-
Other Current Liabilities	-	-
Total Current Liabilities	-	-
Total Debt	-	-
Other Long-Term Liabilities	-	-
Total Liabilities	-	-
Noncontrolling Interest	-	-
Preferred Stock	-	-
Shareholders' Equity	-	-
Total Liabilities and Equity	-	-
Balance Check	*0.000*	*0.000*

Calculation of Fully Diluted Shares Outstanding	
Basic Shares Outstanding	-
Plus: Shares from In-the-Money Options	-
Less: Shares Repurchased	-
Net New Shares from Options	**-**
Plus: Shares from Convertible Securities	-
Fully Diluted Shares Outstanding	**-**

Options/Warrants

Tranche	Number of Shares	Exercise Price	In-the-Money Shares	Proceeds
Tranche 1	-	-	-	-
Tranche 2	-	-	-	-
Tranche 3	-	-	-	-
Tranche 4	-	-	-	-
Tranche 5	-	-	-	-
Total	**-**		**-**	**-**

Convertible Securities

	Amount	Conversion Price	Conversion Ratio	New Shares
Issue 1	-	-	-	-
Issue 2	-	-	-	-
Issue 3	-	-	-	-
Issue 4	-	-	-	-
Issue 5	-	-	-	-
Total				**-**

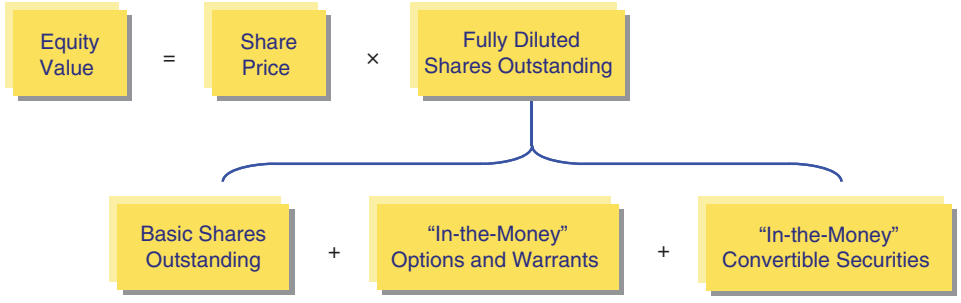
Notes

(1) [to come]
(2) [to come]
(3) [to come]
(4) [to come]

Size: Market Valuation

Equity Value Equity value ("market capitalization") is the value represented by a given company's basic shares outstanding plus "in-the-money" stock options,[30] warrants,[31] and convertible securities—collectively, "fully diluted shares outstanding". It is calculated by multiplying a company's current share price[32] by its fully diluted shares outstanding (see Exhibit 1.6).

EXHIBIT 1.6 Calculation of Equity Value



While equity value provides perspective on relative size, it does not lend insight on share price performance. The company's current share price as a percentage of its 52-week high is much more informative in this respect. This is a widely used metric that provides perspective on valuation and gauges current market sentiment and outlook for both the individual company and its broader sector. If a given company's percentage is significantly out of line with that of its peers, it is generally an indicator of company-specific (as opposed to sector-specific) issues. For example, a company may have missed its earnings guidance or underperformed versus its peers over the recent quarter(s). It may also be a sign of more entrenched issues involving management, operations, or specific markets.

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[30]Stock options are granted to employees as a form of non-cash compensation. They provide the right to buy (call) shares of the company's common stock at a set price ("exercise" or "strike" price) during a given time period. Employee stock options are subject to vesting periods that restrict the number of shares available for exercise according to a set schedule. They become eligible to be converted into shares of common stock once their vesting period expires ("exercisable"). An option is considered "in-the-money" when the underlying company's share price surpasses the option's exercise price.

[31]A warrant is a security typically issued in conjunction with a debt instrument that entitles the purchaser of that instrument to buy shares of the issuer's common stock at a set price during a given time period. In this context, warrants serve to entice investor interest (usually as a detachable equity "sweetener") in riskier classes of securities such as non-investment-grade bonds and mezzanine debt, by providing an increase to the security's overall return.

[32]For trading comps, the banker typically uses the company's share price as of the prior day's close as the basis for calculating equity value and trading multiples.

Calculation of Fully Diluted Shares Outstanding A company's fully diluted shares are calculated by adding the number of shares represented by its in-the-money options, warrants, and convertible securities to its basic shares outstanding.[33] A company's most recent basic shares outstanding count is typically sourced from the first page of its 10-K or 10-Q (whichever is most recent). In some cases, however, the latest proxy statement may contain more updated data and, therefore, should be used in lieu of the 10-K or 10-Q. The most recent stock options/warrants information is obtained from a company's latest 10-K or, in some cases, the 10-Q.

The incremental shares represented by a company's in-the-money options and warrants are calculated in accordance with the treasury stock method (TSM). Those shares implied by a company's in-the-money convertible and equity-linked securities are calculated in accordance with the if-converted method or net share settlement (NSS), as appropriate.

Options and Warrants—The Treasury Stock Method The TSM assumes that all tranches of in-the-money options and warrants are exercised at their weighted average strike price with the resulting option proceeds used to repurchase outstanding shares of stock at the company's current share price. In-the-money options and warrants are those that have an exercise price lower than the current market price of the underlying company's stock. As the strike price is lower than the current market price, the number of shares repurchased is less than the additional shares outstanding from exercised options. This results in a net issuance of shares, which is dilutive.

In Exhibit 1.7, we provide an example of how to calculate fully diluted shares outstanding using the TSM.

EXHIBIT 1.7 Calculation of Fully Diluted Shares Using the Treasury Stock Method

($ in millions, except per share data; shares in millions)

Assumptions	
Current Share Price	$20.00
Basic Shares Outstanding	100.0
In-the-Money Options	5.0
Weighted Average Exercise Price	$18.00

Calculation of Fully Diluted Shares Using the TSM	
Option Proceeds	$90.0
/ Current Share Price	$20.00
Shares Repurchased from Option Proceeds	**4.5**
Shares from In-the-Money Options	5.0
Less: Shares Repurchased from Option Proceeds	(4.5)
Net New Shares from Options	**0.5**
Plus: Basic Shares Outstanding	100.0
Fully Diluted Shares Outstanding	**100.5**

= In-the-Money Options × Exercise Price
= 5.0 million × $18.00

= Option Proceeds / Current Share Price
= $90.0 million / $20.00

Current Share Price of $20.00 > $18.00 Exercise Price

= In-the-Money Options - Shares Repurchased
= 5.0 million - 4.5 million

= Net New Shares from Options + Basic Shares Outstanding
= 0.5 million + 100.0 million

[33]Investment banks and finance professionals may differ as to whether they use "outstanding" or "exercisable" in-the-money options and warrants in the calculation of fully diluted shares outstanding when performing trading comps. For conservatism (i.e., assuming the most dilutive scenario), many firms employ all outstanding in-the-money options and warrants as opposed to just exercisable as they represent future claims against the company.

As shown in Exhibit 1.7, the 5 million options are in-the-money as the exercise price of $18.00 is lower than the current share price of $20.00. This means that the holders of the options have the right to buy the company's shares at $18.00 and sell them at $20.00, thereby realizing the $2.00 differential. Under the TSM, it is assumed that the $18.00 of potential proceeds received by the company is used to repurchase shares that are currently trading at $20.00. Therefore, the number of shares repurchased is 90% ($18.00 / $20.00) of the options, or 4.5 million shares in total (90% × 5 million). To calculate net new shares, the 4.5 million shares repurchased are subtracted from the 5 million options, resulting in 0.5 million. These new shares are added to the company's basic shares outstanding to derive fully diluted shares of 100.5 million.

Convertible and Equity-Linked Securities Outstanding convertible and equity-linked securities also need to be factored into the calculation of fully diluted shares outstanding. Convertible and equity-linked securities bridge the gap between traditional debt and equity, featuring characteristics of both. They include a broad range of instruments, such as traditional cash-pay convertible bonds, convertible hybrids, perpetual convertible preferred, and mandatory convertibles.[34]

This section focuses on the traditional cash-pay convertible bond as it is the most "plain-vanilla" and commonly issued structure. A cash-pay convertible bond ("convert") represents a straight debt instrument and an embedded equity call option that provides for the convert to be exchanged into a defined number of shares of the issuer's common stock under certain circumstances. The value of the embedded call option allows the issuer to pay a lower coupon than a straight debt instrument of the same credit. The strike price of the call option ("conversion price") is typically set at a premium to the company's underlying share price at the time the offering of the converts is priced.

The conversion feature can have different settlement mechanics. The simplest, "physical settlement", requires the issuer to settle conversions entirely in shares (together with cash in lieu of any fractional share). On the other end of the spectrum is "flexible settlement" (sometimes called "Instrument X"), which allows the issuer to settle conversion by delivering any combination of cash and shares, at its election. Finally, "net share settlement" requires the issuer to settle the conversion value in cash up to the principal amount being converted, with any excess of the conversion value of over the principal amount settled in shares.

For the purposes of performing trading comps, to calculate fully diluted shares outstanding, it is standard practice to first determine whether the company's outstanding converts are in-the-money, meaning that the current share price is above the conversion price. The number of diluted shares underlying cash-pay converts is often calculated using either the if-converted method or the treasury stock method, as applicable. Out-of-the-money converts, by contrast, remain treated as debt. Proper treatment of converts requires a careful reading of the relevant footnotes in the company's 10-K or prospectus for the security.

[34]While the overall volume of issuance for convertible and equity-linked securities is less than that for straight debt instruments, they are relatively common in certain sectors, such as healthcare and technology.

If-Converted Method In accordance with the if-converted method, the impact of physically settled converts on the number of diluted shares is calculated by adding an amount equal to the outstanding principal amount of the convert divided by the conversion price.[35] The convert is then treated as equity and included in the calculation of the company's fully diluted shares outstanding and equity value. The equity value represented by the convert is calculated by multiplying the number of dilutive shares underlying the convert by the company's current share price. The convert is then excluded from the calculation of the company's total debt.

As shown in Exhibit 1.8, as the company's current share price of $20.00 is greater than the conversion price of $15.00, we determine that the $150 million convert is in-the-money. Therefore the convert's outstanding principal amount is simply divided by the conversion price to calculate new shares of 10 million ($150 million / $15.00). The number of underlying shares is then added to the company's basic shares outstanding of 100 million and net new shares from in-the-money options of 0.5 million to calculate fully diluted shares outstanding of 110.5 million.

The assumed conversion of in-the-money converts also requires an upward adjustment to the company's net income to account for the foregone interest expense payments associated with the coupon on the convert. This amount must be tax-effected before being added back to net income. Therefore, while the if-converted method can be EPS dilutive due to the additional number of shares, net income is actually higher on a pro forma basis.

EXHIBIT 1.8 Calculation of Fully Diluted Shares Using the If-Converted Method

($ in millions, except per share data; shares in millions)

Assumptions	
Company	
Current Share Price	$20.00
Basic Shares Outstanding	100.0
Convertible	
Amount Outstanding	$150.0
Conversion Price	$15.00

If-Converted	
Amount Outstanding	$150.0
/ Conversion Price	$15.00
Incremental Shares	**10.0**
Plus: Net New Shares from Options	0.5
Plus: Basic Shares Outstanding	100.0
Fully Diluted Shares Outstanding	**110.5**

= Amount Outstanding / Conversion Price
= $150.0 million / $15.00

Calculated in Exhibit 1.7

= New Shares from Conversion
+ Net New Shares from Options
+ Basic Shares Outstanding
= 10.0 million + 0.5 million + 100.0 million

[35]For GAAP reporting purposes (e.g., for EPS and fully diluted shares outstanding), the if-converted method requires issuers to measure the dilutive impact of the security through a two-test process. First, the issuer needs to test the security as if it were debt on its balance sheet, with the stated interest expense reflected in net income and the underlying shares omitted from the share count. Second, the issuer needs to test the security as if it were converted into equity at the beginning of the reporting period (or, if later, the date when the security was issued), which involves excluding the after-tax interest expense of the convert from net income and including the full underlying shares in the share count (or on a weighted average basis, if the convert was issued in the middle of the reporting period). Upon completion of the two tests, the issuer is required to use the more dilutive of the two methodologies.

Net Share Settlement Net share settlement and flexible settlement are common features in convertible bonds and often used by more mature, larger capitalized issuers.[36] These settlement methods serve to limit the dilutive effects of conversion and can in some cases afford the issuer TSM accounting treatment. For example, in net share settlement, only the value represented by the excess of the current share price over the conversion price is assumed to be settled with the issuance of additional shares, which results in less share issuance.[37]

As shown in Exhibit 1.9, the if-converted method results in incremental dilutive shares of 10 million, while NSS results in incremental dilutive shares of only 2.5 million. The NSS calculation is conducted by first multiplying the number of shares underlying the convert of 10 million by the company's current share price of $20.00 to determine the implied conversion value of $200 million. The $50 million spread between the conversion value and par ($200 million – $150 million) is then divided by the current share price to determine the number of incremental dilutive shares of 2.5 million ($50 million / $20.00).[38] The $150 million principal amount of the convert remains treated as debt due to the fact that the issuer typically must settle this amount in cash at maturity.

EXHIBIT 1.9 Incremental Shares from If-Converted Versus Net Share Settlement

($ in millions, except per share data; shares in millions)

If-Converted	
Amount Outstanding	$150.0
/ Conversion Price	$15.00
Incremental Shares	**10.0**
Incremental Shares – If-Converted	**10.0**

Net Share Settlement	
Amount Outstanding	$150.0
/ Conversion Price	$15.00
Incremental Shares	**10.0**
× Current Share Price	$20.00
Total Conversion Value	**$200.0**
Less: Par Value of Amount Outstanding	(150.0)
Excess Over Par Value	**$50.0**
/ Current Share Price	$20.00
Incremental Shares – NSS	**2.5**

= Excess Over Par Value / Current Share Price
= $50.0 million / $20.00

= Total Conversion Value - Par Value of Amt. Out.
= $200.0 million - $150.0 million

= Incremental Shares × Current Share Price
= 10.0 million × $20.00

= Amount Outstanding / Conversion Price
= $150.0 million / $15.00

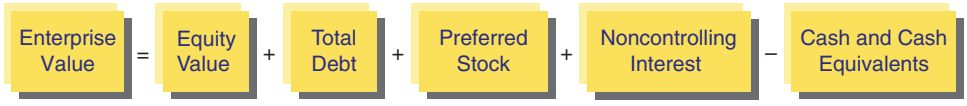
[36]Effective for fiscal years beginning after December 15, 2008, the Financial Accounting Standards Board (FASB) put into effect guidelines for accounting for converts whose conversion can be settled in cash. These changes effectively bifurcate such converts into their debt and equity components, resulting in higher reported GAAP interest expense due to the higher imputed cost of debt. However, the guidelines do not change the calculation of shares outstanding in accordance with the TSM. Moreover, in July 2019, FASB proposed to eliminate this bifurcated accounting. Therefore, one should consult with a capital markets specialist for accounting guidance on in-the-money converts with NSS features.

[37]The NSS feature may also be structured so that the issuer can elect to settle the excess conversion value in cash.

[38]As the company's share price increases, the amount of incremental shares issued also increases as the spread between conversion and par value widens.

Enterprise Value Enterprise value ("total enterprise value" or "firm value") is the sum of all ownership interests in a company and claims on its assets from both debt and equity holders. As the graphic in Exhibit 1.10 depicts, it is defined as equity value + total debt + preferred stock + noncontrolling interest[39] – cash and cash equivalents. The equity value component is calculated on a fully diluted basis.

EXHIBIT 1.10 Calculation of Enterprise Value



Theoretically, enterprise value is considered independent of capital structure, meaning that changes in a company's capital structure do not affect its enterprise value. For example, if a company raises additional debt that is held on the balance sheet as cash, its enterprise value remains constant as the new debt is offset by the increase in cash (i.e., net debt remains the same, see Scenario I in Exhibit 1.11). Similarly, if a company issues equity and uses the proceeds to repay debt, the incremental equity value is offset by the decrease in debt on a dollar-for-dollar basis (see Scenario II in Exhibit 1.11).[40] Therefore, these transactions are enterprise value neutral.

In both Scenario I and II, enterprise value remains constant despite a change in the company's capital structure. Hence, similar companies would be expected to have consistent enterprise value multiples despite differences in capital structure. One notable exception concerns highly leveraged companies, which may trade at a discount relative to their peers due to the perceived higher risk of financial distress[41] and potential constraints to growth.

[39]Formerly known as "minority interest", noncontrolling interest is a significant, but non-majority, interest (less than 50%) in a company's voting stock by another company or an investor. Effective for fiscal years beginning after December 15, 2008, FAS 160 changed the accounting and reporting for minority interest, which is now called noncontrolling interest and can be found in the shareholders' equity section of a company's balance sheet. On the income statement, the noncontrolling interest holder's share of income is subtracted from net income.

[40]These illustrative scenarios ignore financing fees associated with the debt and equity issuance as well as potential breakage costs associated with the repayment of debt (see Chapter 4).

[41]Circumstances whereby a company is unable or struggles to meet its credit obligations, typically resulting in business disruption, insolvency, or bankruptcy. As the perceived risk of financial distress increases, equity value generally decreases accordingly.

EXHIBIT 1.11 Effects of Capital Structure Changes on Enterprise Value

($ in millions)

Scenario I: Issuance of Debt	Actual 2018	Adjustments +	Adjustments -	Pro forma 2018
Equity Value	$750			$750
Plus: Total Debt	250	100		350
Plus: Preferred Stock	35			35
Plus: Noncontrolling Interest	15			15
Less: Cash and Cash Equivalents	(50)		(100)	(150)
Enterprise Value	**$1,000**			**$1,000**

Scenario II: Issuance of Equity to Repay Debt	Actual 2018	Adjustments +	Adjustments -	Pro forma 2018
Equity Value	$750	100		$850
Plus: Total Debt	250		(100)	150
Plus: Preferred Stock	35			35
Plus: Noncontrolling Interest	15			15
Less: Cash and Cash Equivalents	(50)			(50)
Enterprise Value	**$1,000**			**$1,000**

Size: Key Financial Data

- **Sales** (or revenue) is the first line item, or "top line", on an income statement. Sales represents the total dollar amount realized by a company through the sale of its products and services during a given time period. Sales levels and trends are a key factor in determining a company's relative positioning among its peers. All else being equal, companies with greater sales volumes tend to benefit from scale, market share, purchasing power, and lower risk profile, and are often rewarded by the market with a premium valuation relative to smaller peers.
- **Gross Profit**, defined as sales less cost of goods sold (COGS),[42] is the profit earned by a company after subtracting costs directly related to the production of its products and services. As such, it is a key indicator of operational efficiency and pricing power, and is usually expressed as a percentage of sales for analytical purposes (gross profit margin, see Exhibit 1.12). For example, if a company sells a product for $100, and that product costs $60 in materials, manufacturing, and direct labor to produce, then the gross profit on that product is $40 and the gross profit margin is 40%.
- **EBITDA** (earnings before interest, taxes, depreciation and amortization) is an important measure of profitability. As EBITDA is a non-GAAP financial measure and typically not reported by public filers within their 10-K's and 10-Q's, it is generally calculated by taking EBIT (or operating income/profit as often reported on the income statement) and adding back the depreciation and amortization

[42]COGS, as reported on the income statement, may include or exclude D&A depending on the filing company. If D&A is excluded, it is reported as a separate line item on the income statement.

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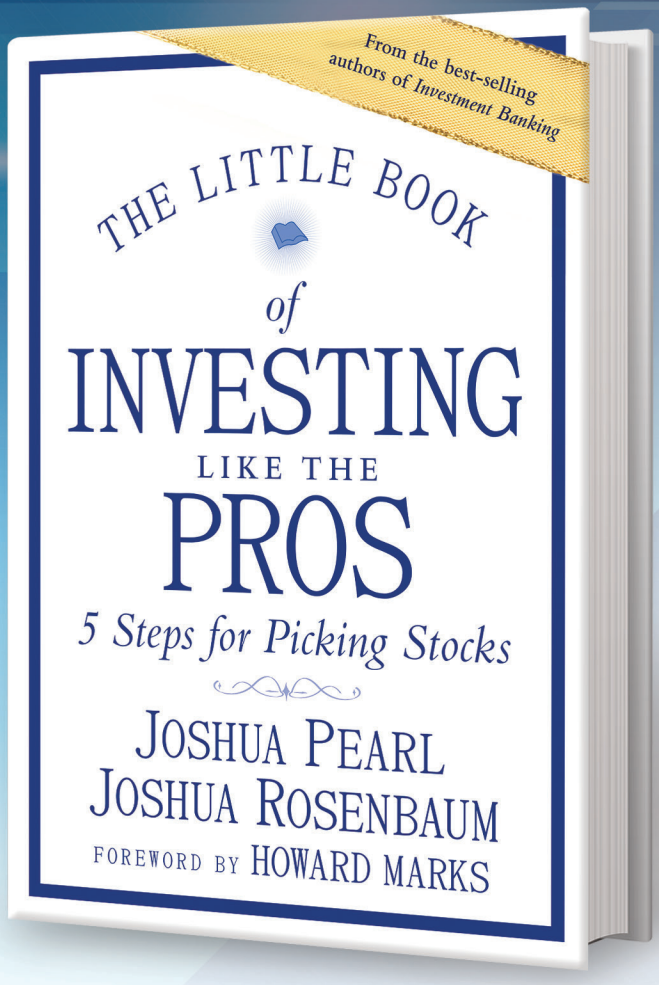
DEMYSTIFY THE ART & SCIENCE OF PICKING STOCKS



Stock investing is more prevalent than ever, whether directly or indirectly through brokerage accounts, exchange-traded funds, mutual funds, or retirement plans. Despite this, the vast majority of individual investors have no training on how to pick stocks. And, until now, there hasn't been a truly accessible, easy-to-understand resource available to help them. *The Little Book of Investing Like the Pros* was written to fill this void.

FROM THE AUTHORS OF
Investment Banking

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